WHAT IS CLAIMED IS:

1. An apparatus comprising a cooling structure including:

a heat receiving portion having a footprint and configured to receive heat within said footprint from a heat generating structure, said footprint having a width in a first direction;

an inlet portion for a fluid coolant, said inlet portion being disposed within said width of said footprint with respect to said first direction;

an outlet portion for said fluid coolant, said outlet portion being disposed within said width of said footprint with respect to said first direction, said inlet portion and said outlet portion being spaced from said heat receiving portion with respect to a second direction approximately normal to said first direction;

a coolant supply portion configured to guide a fluid coolant from said inlet portion to the region of said heat receiving portion, said coolant supply portion being disposed in its entirety within said width of said footprint with respect to said first direction; and

a coolant application portion configured to receive said coolant from said coolant supply portion and to guide said coolant from the region of said heat receiving portion to said outlet portion, said coolant application portion being disposed in its entirety within said width of said footprint with respect to said first direction, said coolant receiving heat at said heat receiving portion after traveling through said coolant supply portion and before traveling through said coolant application portion.

2. An apparatus according to Claim 1,

wherein said cooling structure has first and second sides disposed on opposite sides thereof, said inlet and outlet portions being disposed along said first side; and

including an antenna element arrangement having a plurality of antenna elements disposed along said second side.

3. An apparatus according to Claim 2, including circuitry which is supported on said cooling structure, which is electrically coupled to said antenna elements, and which has a portion serving as heat generating structure that supplies heat to said heat receiving portion.

4. An apparatus according to Claim 1, wherein said coolant arrives at said heat receiving portion in the form of a liquid at a pressure lower than an ambient pressure of a surrounding environment, and at least some of said coolant boils and vaporizes at said heat receiving portion in response to the absorption of heat.

5. An apparatus according to Claim 1,

wherein said coolant supply portion includes a coolant supply passageway and said coolant application portion includes a coolant application passageway; and

wherein said cooling structure includes an aperture upstream from said heat receiving region through which said coolant supply passageway communicates with said heat receiving region, said aperture having a cross-section substantially smaller than both a cross-section proximate said aperture of said coolant application passageway and a cross-section proximate said aperture of said coolant supply passageway.

6. An apparatus according to Claim 1,

wherein said coolant supply portion is formed generally proximate a first plane which is parallel to said first and second directions, and

wherein said coolant application portion is formed generally proximate a second plane offset from and parallel with said first plane.

7. An apparatus according to Claim 1,

wherein said outlet portion of said cooling structure includes a liquid outlet and a vapor outlet separate from said liquid outlet; and

wherein said coolant application portion includes a coolant separating portion configured to receive the coolant traveling away from said heat receiving portion, to separate liquid coolant from vapor coolant, and to guide said separated liquid coolant to said liquid outlet and said separated vapor coolant to said vapor outlet.

8. An apparatus according to Claim 7, wherein said coolant separating portion includes an additional heat receiving portion configured to receive heat from an additional heat generating structure, said coolant receiving heat at said additional heat receiving portion while traveling through said coolant separating portion.

9. An apparatus according to Claim 8, wherein said coolant separating portion includes a cavity and wherein said additional heat receiving portion includes a heat conductive structure disposed within said cavity, said coolant receiving heat from said heat conducting structure at said additional heat receiving portion.

10. An apparatus according to Claim 8, wherein said coolant which receives heat at said additional heat receiving portion includes coolant which is in liquid form and which is at a pressure lower than an ambient pressure of a surrounding environment so that said liquid coolant boils and vaporizes in response to the absorption of heat.

11. An apparatus according to Claim 1,

wherein said coolant application portion includes a plurality of coolant application passageways oriented approximately parallel to each other; and

wherein said cooling structure includes, for each of said coolant application passageways, a respective set of apertures upstream from said heat receiving portion, each said set of apertures allowing coolant to flow from said coolant supply portion into a respective one of said coolant application passageways.

12. An apparatus according to Claim 1,

wherein said coolant application portion of said cooling structure includes a plurality of coolant application passageways;

wherein said heat receiving portion includes a plurality of heat receiving regions, each said heat receiving region being configured to receive heat within said footprint from one of a plurality of heat generating devices; and

wherein each of said plurality of coolant application passageways corresponds with one of said plurality of heat receiving regions of said heat receiving portion.

13. An apparatus according to Claim 12, wherein each of said coolant application passageways is aligned with a respective one of said heat receiving regions with respect to said first direction.

14. A method, comprising the steps of:

providing a cooling structure which includes a heat receiving portion, an inlet portion, an outlet portion, a coolant supply portion, and a coolant application portion, said heat receiving portion having a footprint with a width in a first direction and being configured to receive heat within said footprint from a heat generating structure;

locating each of said inlet portion, said outlet portion, said coolant supply portion, and said coolant application portion within said width of said footprint with respect to said first direction;

positioning said inlet portion and said outlet portion at locations spaced from said heat receiving portion with respect to a second direction approximately normal to said first direction;

causing a fluid coolant to flow through said coolant supply portion from said inlet portion to the region of said heat receiving portion; and

causing said coolant to flow through said coolant application portion from the region of said heat receiving portion to said outlet portion, said coolant receiving heat at said heat receiving portion after traveling through said coolant supply portion and before traveling through said coolant outlet portion.

15. A method according to Claim 14, including:

configuring said cooling structure to have first and second sides disposed on opposite sides thereof, said inlet and outlet portions being disposed along said first side; and

providing an antenna element arrangement having a plurality of antenna elements disposed along said second side.

16. A method according to Claim 15, including:

supporting circuitry on said cooling structure, said circuitry being electrically coupled to said antenna elements, and having a portion which serves as heat generating structure that supplies heat to said heat receiving portion.

17. A method according to Claim 14, including:

configuring said coolant supply portion to include a coolant supply passageway;

configuring said coolant application portion to include a coolant application passageway;

configuring said cooling structure to include upstream from said heat receiving portion an aperture through which said coolant supply passageway communicates with said heat receiving portion, said aperture having a cross-section substantially smaller than both a cross-section proximate said aperture of said coolant application passageway and a cross-section proximate said aperture of said coolant supply passageway; and

causing coolant to flow from said coolant supply portion through said aperture to said heat receiving portion.

18. A method according to Claim 14, including causing coolant flowing through said heat receiving portion and said coolant application portion to be a two-phase coolant having a pressure lower than an ambient pressure of a surrounding environment, such that at least some of said coolant boils and vaporizes at said heat receiving portion in response to the absorption of heat.

19. A method according to Claim 14, including configuring said cooling structure so that said coolant supply portion is formed generally proximate a first plane which is parallel to said first and second directions, and so that said coolant application portion is formed generally proximate a second plane spaced from and parallel with said first plane.

20. A method according to Claim 14, including:

selecting as said coolant a two-phase coolant having a liquid state and a vapor state;

configuring said outlet portion of said cooling structure to include a liquid outlet and a vapor outlet separate from said liquid outlet;

receiving in a coolant separating portion from said heat receiving portion coolant which includes a mixture of liquid coolant and vapor coolant;

separating said liquid coolant from said vapor coolant in said coolant separating portion;

supplying said separated liquid coolant to said liquid outlet; and

supplying said separated vapor coolant to said vapor outlet.

21. A method according to Claim 20, wherein said coolant separating portion includes an additional heat receiving portion configured to receive heat from an additional heat generating structure; and

including causing liquid coolant received in said coolant separating portion from said heat receiving portion to receive heat at said additional heat receiving portion.

22. A method according to Claim 14, including:

configuring said coolant application portion of said cooling structure to include a plurality of coolant application passageways oriented approximately parallel to each other;

configuring said cooling structure to include, for each of said coolant application passageways, a respective set of apertures disposed upstream from said heat receiving portion; and

causing respective portions of said coolant to flow from said coolant supply portion to each of said coolant application passageways through a respective said set of apertures.

23. An apparatus comprising a slat which includes:

a heat receiving portion configured to receive heat from heat generating structure; and

a cooling structure configured to guide a two-phase fluid coolant past said heat receiving portion, said coolant receiving heat at said heat receiving portion so that at least a portion of said coolant transitions from a liquid state to a vapor state in response to the absorption of heat; and

wherein said cooling structure includes a coolant separating portion which receives the coolant traveling away from said heat receiving portion and separates liquid coolant from vapor coolant.

24. An apparatus according to Claim 23, including a plurality of antenna elements disposed along one side of said slat.

25. An apparatus according to Claim 24, including circuitry which is supported on said slat, which is electrically coupled to said antenna elements, and which has a portion serving as heat generating structure that supplies heat to said heat receiving portion.

26. An apparatus according to Claim 23, wherein said slat includes an additional heat receiving portion adjacent said coolant separating portion, such that liquid coolant within said coolant separating portion absorbs heat from said additional heat receiving portion.

27. An apparatus according to Claim 26, wherein said coolant separating portion is configured to receive liquid coolant at a pressure lower than an ambient pressure of a surrounding environment, so that a portion of said liquid coolant within said coolant separating portion boils and vaporizes in response to absorption of heat from said additional heat receiving portion.

28. An apparatus according to Claim 23, wherein said cooling structure includes a liquid outlet and a vapor outlet which are disposed proximate one side of said slat and which are each in fluid communication with said coolant separating portion, said coolant separating portion routing liquid coolant to said liquid outlet and vapor coolant to said vapor outlet.

29. An apparatus according to Claim 23,

wherein said slat includes an additional heat receiving portion adjacent said coolant separating portion;

wherein said additional heat receiving portion includes a heat conducting structure; and

wherein said cooling structure is configured so that coolant in said coolant separating portion is brought into thermal communication with and absorbs heat from said heat conductive structure at said additional heat receiving portion.

30. A method, comprising:

providing a slat including a heat receiving portion and a cooling structure, said heat receiving portion being configured to receive heat from heat generating structure, and said cooling structure being configured to guide a two-phase fluid coolant past said heat receiving portion;

causing said coolant to flow past said heat receiving portion such that said coolant receives heat from said heat receiving portion and at least a portion of said coolant transitions from a liquid state to a vapor state in response to the absorption of heat;

receiving at said coolant separating portion the coolant traveling away from said heat receiving portion; and

separating liquid coolant from vapor coolant at said coolant separating portion.

31. A method according to Claim 30, including providing on said slat a plurality of antenna elements disposed along one side of said slat.

32. A method according to Claim 31, including providing on said slat circuitry which is electrically coupled to said antenna elements, and which has a portion serving as heat generating structure that supplies heat to said heat receiving portion.

33. A method according to Claim 30,

including configuring said slat to have an additional heat receiving portion adjacent said coolant separating portion; and

causing liquid coolant flowing through said coolant separating portion to absorb heat from said additional heat receiving portion.

34. A method according to Claim 30, further comprising receiving said coolant at said coolant separating portion at a pressure lower than an ambient pressure of a surrounding environment, so that a portion of said coolant boils and vaporizes in response to absorption of heat from said additional heat receiving portion.

35. A method according to Claim 30, including:

configuring said cooling structure to include a liquid outlet and a vapor outlet separate from said liquid outlet;

supplying said separated liquid coolant from said coolant separating portion to said liquid outlet; and

supplying said separated vapor coolant from said coolant separating portion to said vapor outlet.

36. A method according to Claim 30, including configuring said slat to have an additional heat receiving portion which is adjacent said coolant separating portion and includes a heat conductive structure; and

bringing said coolant into thermal communication with said heat conductive structure at said additional heat receiving portion so that said liquid coolant absorbs heat from said heat conductive structure at said heat receiving portion.